

1. Amendments to the Claims:

A clean version of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR § 1.121(c)(3). This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously presented) A method of manufacturing a device having a magnetic layer-structure, the method comprising:

forming the magnetic layer-structure;

heating the magnetic layer-structure by applying an electric current, the electric current comprising a current pulse having a duration such that heat resulting from the current pulse is substantially localized within the magnetic layer; and

selecting a physical process from a plurality of different physical processes having corresponding activation energies in the magnetic layer-structure based on the current pulse, a duration and an amplitude of the current pulse being adapted to an activation energy of the selected physical process.

2. (Canceled)

3. (Previously presented) The method as claimed in claim 1, wherein selecting the physical process in the magnetic layer-structure comprises selecting a layer physical process in one magnetic layer of the magnetic layer-structure, based on the duration and amplitude of the current pulse.

4. (Previously presented) The method as claimed in claim 1, wherein selecting the physical process comprises increasing the amplitude and decreasing the pulse duration of the current pulse.

5. (Previously presented) The method as claimed in claim 16, wherein the electric current comprises a sequence of current pulses, which is applied without substantial heat transfer from the magnetic layer-structure to the environment.

6. (Previously presented) The method as claimed in claim 1, wherein the device comprises a magnetoresistive device.

7. (Previously presented) The method as claimed in claim 6, herein the device is a sensing device.

8. (Previously presented) The method as claimed in claim 1, wherein the magnetic layer-structure comprises at least one bias layer, the method further comprising:

applying a magnetic field in a desired direction to the at least one bias layer during the current pulse, the current pulse heating the magnetic layer-structure until a temperature of the at least one bias layer increases above a corresponding blocking temperature; and

switching off the magnetic field after the temperature of the at least one bias layer decreases to below Néel or Curie temperature of the at least one bias layer.

9. (Canceled)

10. (Previously presented) The method as claimed claim 1, wherein a duration of the current pulse is shorter than 100 ms.

11. (Previously presented) The method as claimed in claim 8, wherein the device is included in a magnetic system having a plurality of magnetoresistive devices.

12. (Previously presented) The method as claimed in claim 11, wherein the magnetic system comprises at least four magnetoresistive devices, arranged in a Wheatstone bridge configuration.

13. (Canceled)

14-15. (Canceled)

16. (Previously presented) The method as claimed in claim 1, wherein a temperature of an environment outside of the magnetic layer-structure before and after the current pulse is substantially the same.

17. (Previously presented) The method as claimed in claim 16, wherein the environment of the magnetic layer-structure comprises a substrate on which magnetic layer-structure is formed.

18. (Previously presented) The method as claimed in claim 1, wherein the plurality of physical processes comprise changing resistance of at least one layer in the magnetic layer-structure and changing magnetization direction of at least one layer in the magnetic layer-structure.

19. (Previously presented) A method of manufacturing a device having a magnetic layer-structure, the method comprising:

forming the magnetic layer-structure on a substrate, the magnetic layer-structure comprising at least one bias layer;

applying a magnetic field in a desired direction to the at least one bias layer;

applying an electric current to the magnetic layer-structure, the electric current comprising a current pulse having a duration and an amplitude that heats

the magnetic layer-structure while the magnetic field is applied to the at least one bias layer, the heat being substantially localized within the magnetic layer-structure, wherein the current pulse heats the magnetic layer-structure until a temperature of the at least one bias layer increases above a corresponding blocking temperature; and

switching off the magnetic field after the temperature of the at least one bias layer decreases to below Néel or Curie temperature of the at least one bias layer.